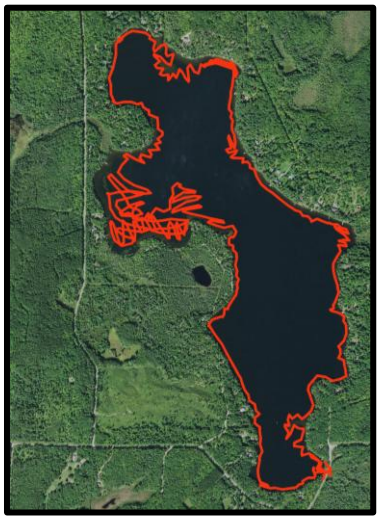
Eurasian Water-milfoil (*Myriophyllum spicatum*) Meandering Littoral Zone Survey Diamond Lake (WBIC: 2897100) Bayfield County, Wisconsin

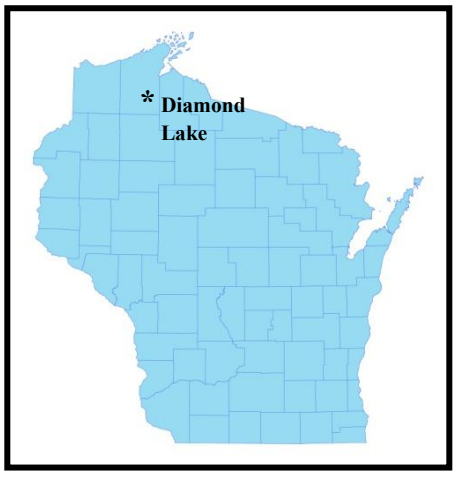
Calm survey conditions on Diamond Lake – 8/17/25



Aerial with survey tracks – 8/17/25

Project Initiated by:

Diamond Lakers and the
Wisconsin Department of Natural Resources



Northern water-milfoil bed near the public landing – 8/17/25

Survey Conducted by and Report Prepared by:

Endangered Resource Services, LLC
Matthew S. Berg, Research Biologist
St. Croix Falls, Wisconsin
August 17, 2025

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INTRODUCTION:

Diamond Lake (WBIC 2897100) is a 322-acre stratified drainage lake in south-central Bayfield County, Wisconsin in the Town of Grandview (T44N R6W S20, 29, and 32). It reaches a maximum depth of 83ft in the central basin and has an average depth of approximately 33ft (WDNR 2025). The lake is oligotrophic in nature with summer Secchi readings averaging 12.5ft over the last ten years (WDNR 2025). This good clarity produced a littoral zone that extended to approximately 17.0ft in August of 2025. The bottom is dominated by sand and gravel along the shoreline, but this gradually transitions to sandy muck at greater depths (Burnkrant et al. 1968) (Figure 1).

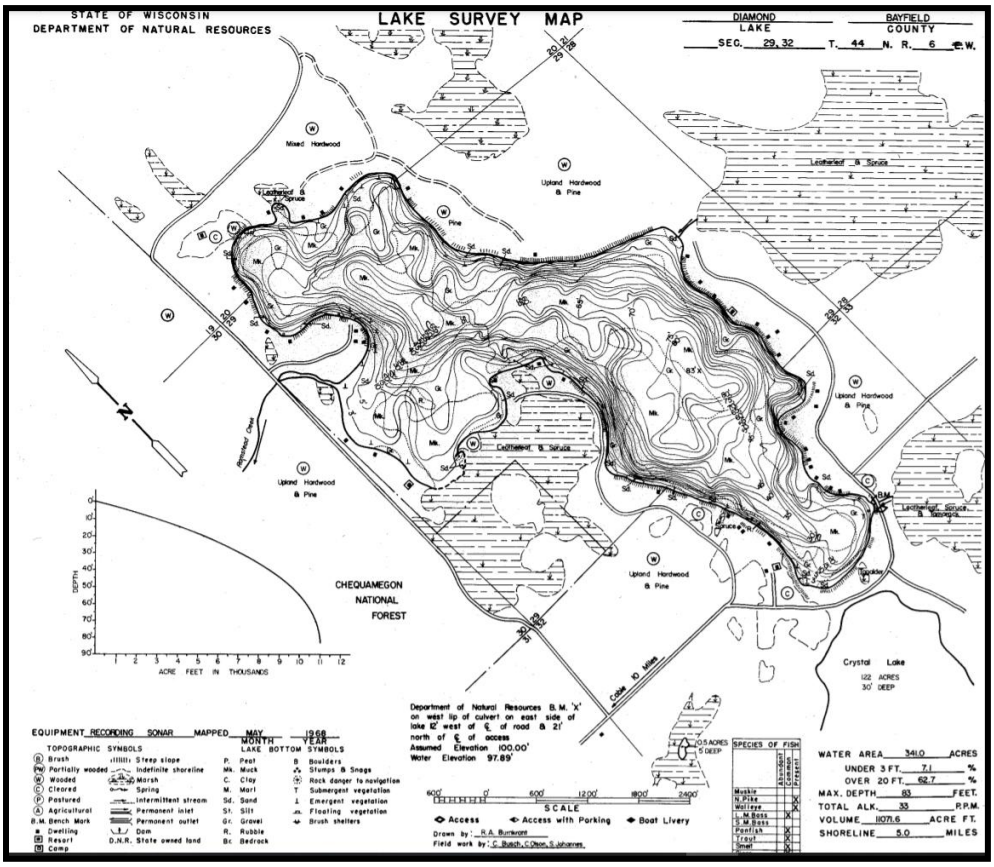


Figure 1: Diamond Lake Bathymetric Map

BACKGROUND AND STUDY RATIONALE:

The Diamond Lakers (DL) and the Wisconsin Department of Natural Resources (WDNR) authorized a whole-lake point-intercept plant survey in 2021 to establish baseline data on the lake's macrophyte community. Although the exotic species Common forget-me-not (*Myosotis scorpioides*) and Reed canary grass (*Phalaris arundinacea*) were found along the shoreline, this survey found no evidence of Curly-leaf pondweed (*Potamogeton crispus*) (CLP), Eurasian water-milfoil (*Myriophyllum spicatum*) (EWM), or any other aquatic invasive plant species (AIS). In an effort to determine if the lake remained free of these or any other exotic plant species, the DL requested we complete a meandering visible littoral zone search in late summer 2025. This report is the summary of our August 17, 2025 survey.

SURVEY METHODS:

We conducted a meandering littoral zone survey along the shoreline of the entire lake to look for Eurasian water-milfoil (or any other new AIS) in the zone of plant growth it would most likely be found in. We especially focused on the north and east shores as these are places that floating fragments introduced at the public boat landing would most likely get blown to by the prevailing summer winds before settling to the lake bottom.

RESULTS AND DISCUSSION:

We surveyed transects totaling 15.7km (9.8 miles) throughout the visible littoral zone (Figure 2) (Appendix I), but we **did NOT find Eurasian water-milfoil anywhere in Diamond Lake**. We again noted that the lake has significant amounts of Northern water-milfoil (NWM) – a native species that is closely related to EWM. Despite their superficial resemblance, EWM and NWM can be told apart by their number of leaflets – NWM has <24 whereas EWM normally has >26 (Figure 3). EWM also tends to have a bright red growth tip on the top of the plant whereas NWM has a bright lime green growth tip. In the fall, NWM forms winter buds on the tips of shoots whereas EWM has none.

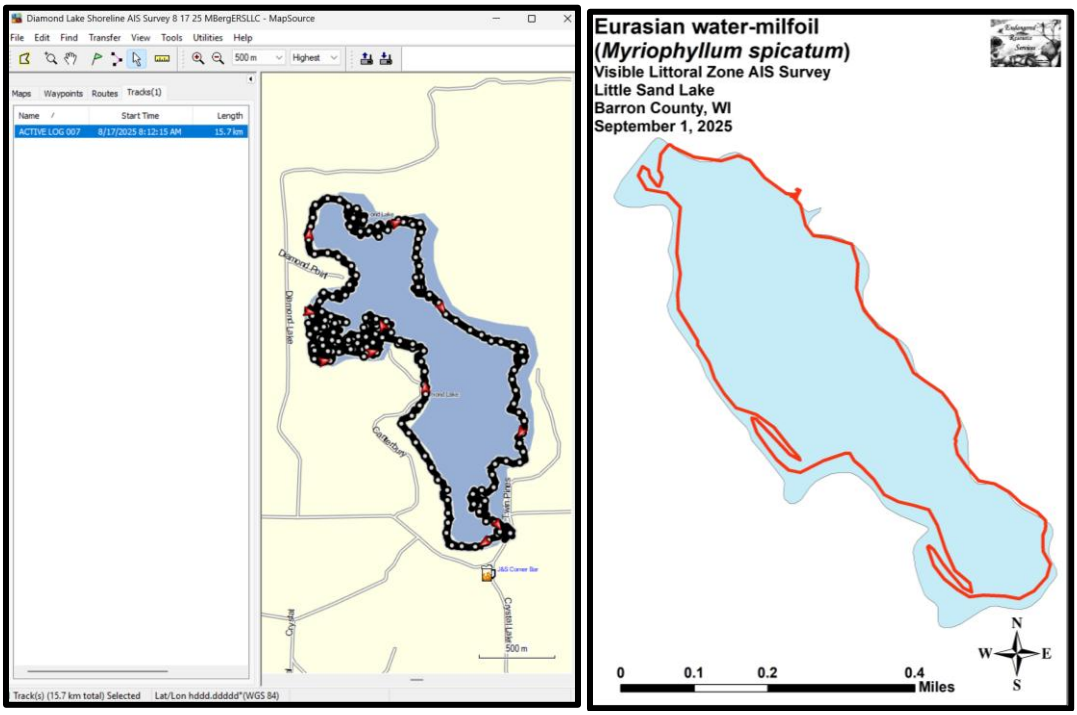


Figure 2: 2025 Shoreline Survey Tracks

In addition to Northern water-milfoil, the lake also supports a significant population of the much rarer Alternate-flowered water-milfoil (*Myriophyllum alterniflorum*) – a small native species with dense leaflet whorls that look bottle brush-like (Figure 4) (For more information on differentiating milfoil species, see Appendix II). In addition to these native milfoils, the lake has low numbers of another somewhat similar looking beneficial native species – Common bladderwort (*Utricularia vulgaris*) (Figure 5). Bladderworts

were most common in the north and west-central bays where they primarily occur in water <1.5m over organic muck substrates. Common bladderwort can be told from the milfoils as it has tiny "bladders" along their forked leaflets where these carnivorous plants trap and digest minute aquatic animals like mosquito larvae.

Eurasian water- milfoil

Northern water-milfoil

Figure 3: Eurasian and Northern Water-milfoil Identification (Berg 2007)

Figure 4: Alternate-flowered Water-milfoil Identification
(Berg/Cameron 2025)

Figure 5: Common Bladderwort Identification (Skawinski 2010)

We also found no evidence of Purple loosestrife (*Lythrum salicaria*) (Figure 6) in Diamond Lake – another exotic invasive species with scattered populations throughout Bayfield County. We did, however, see two somewhat similar looking native species – Pickerelweed (*Pontederia cordata*) (Figure 7) and Water smartweed (*Polygonum amphibium*) (Figure 8) – around the Diamond Lake shoreline.

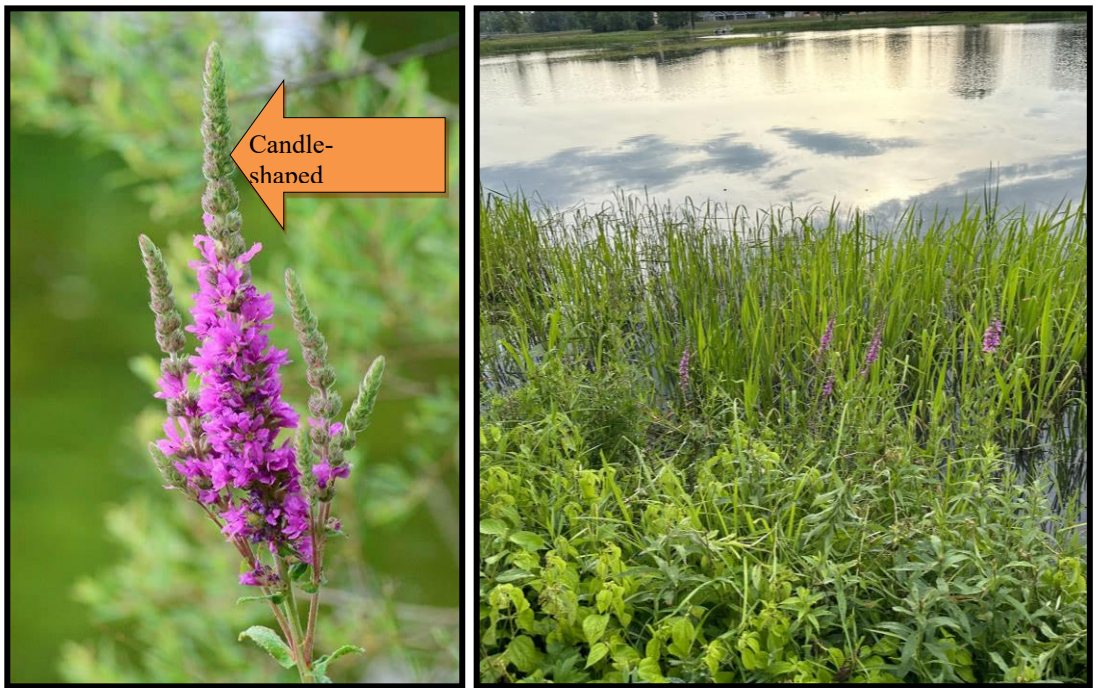


Figure 6: Purple Loosestrife Identification/Plants on a Nearby Lake

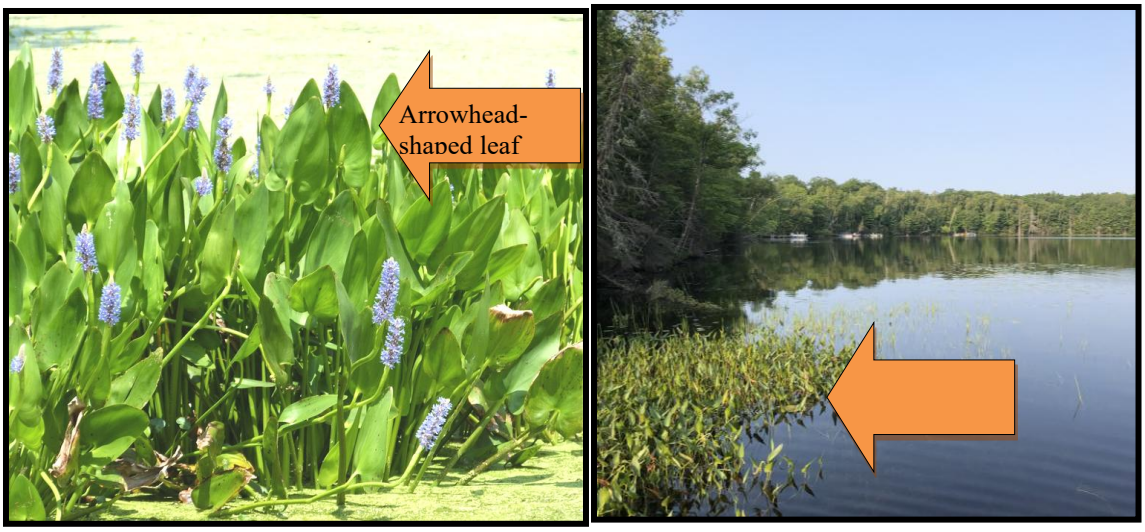


Figure 7: Pickerelweed Identification/Patch on Diamond Lake

Figure 8: Water Smartweed Identification (Terrestrial and Aquatic Forms)

CONSIDERATIONS FOR FUTURE MANAGEMENT:

With EWM growing in several nearby Bayfield County Lakes (Namekagon/Garden/Jackson), continued landing/shoreline inspections on a regular basis may be prudent. Early detection of EWM provides the best chance to economically contain the plant once an infestation has occurred. We encourage any lake resident or boater that discovers a plant they even suspect may be EWM to immediately contact Matthew Berg, ERS, LLC Research Biologist at 715-338-7502 for identification confirmation. Ideally, a specimen, a jpg, and the accompanying GPS coordinates of the location should be included. However, even a texted picture of the plant in question held in hand is often enough to confirm identification.

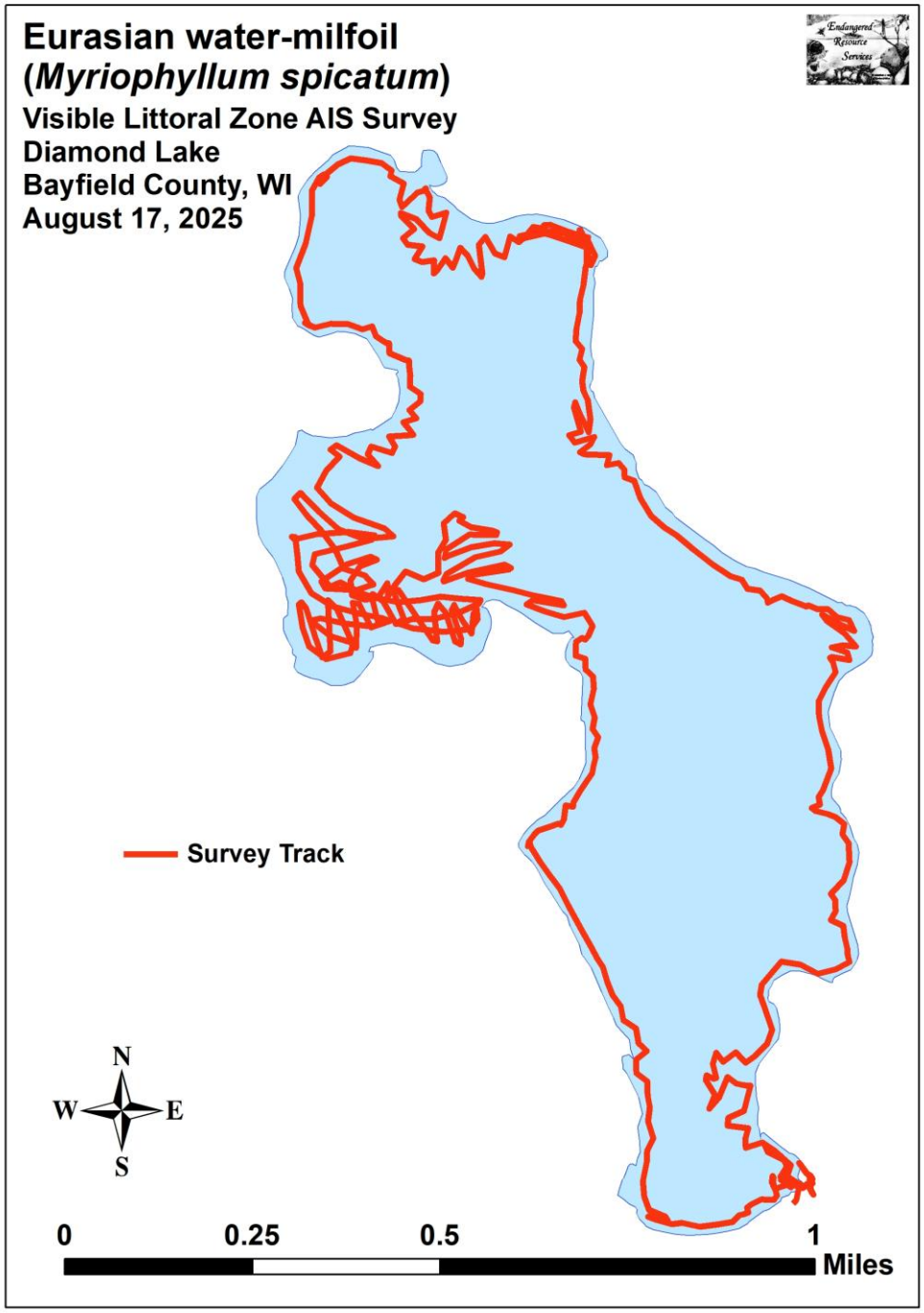
LITERATURE CITED

Burnkrant, R. A., C. Busch, C. Olson, and S. Johannes. [online]. 1968. Diamond Lake Bathymetric Map. Diamond Lake – Bayfield County, Wisconsin DNR Lake Map, May 1968, Not for Navigation (2025 September).

WDNR. [online]. 2025. Citizen Lake Water Quality Monitoring Database – Diamond Lake. Available from https://dnr-wisconsin.shinyapps.io/WaterExplorer/?stationid=043126 (2025 September).

WDNR. [online]. 2025. WDNR Lakes Information – Diamond Lake. Available from https://apps.dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=2897100 (2025 September).

Appendix I: Diamond Lake Survey Tracks


Eurasian water-milfoil
(Myriophyllum spicatum)
Visible Littoral Zone AIS Survey
Diamond Lake
Bayfield County, WI
August 17, 2025
Endangered Resource Services
Survey Track
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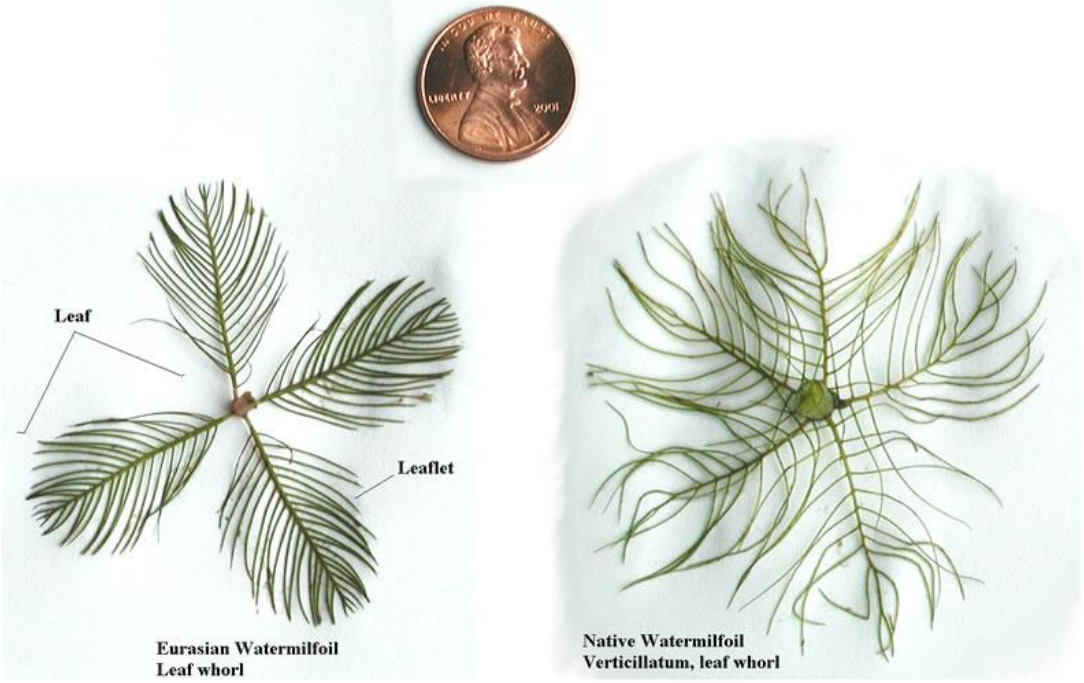
Appendix II: Milfoil Identification Guide

Eurasian water-milfoil vs. Northern water-milfoil
(Common in Diamond Lake)

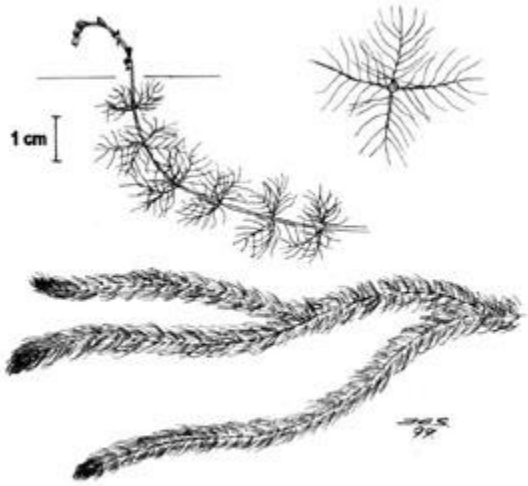
EWM Leaflets >26 NWM Leaflets < 22

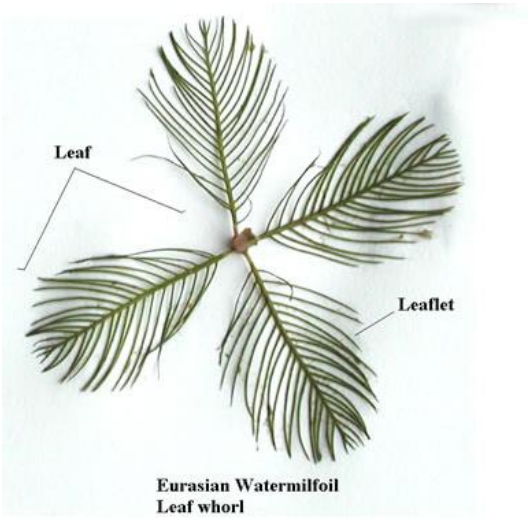
EWM Leaflets Limp out of Water NWM Leaflets Stiff Out of Water

Eurasian water-milfoil vs. Whorled water-milfoil
(Not present in Diamond Lake)



Alternate-flowered water-milfoil (Common in Diamond Lake)
Stems have a bushy bottle brush-like appearance
AFWM has <18 leaflets vs. EWM's >26)





Dwarf water-milfoil (Common in Diamond Lake)

Plants spread by rhizomes, have no leaflets and are usually <6in.